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09/042,681	03/12/1998	AKIKO ISHIDA	MAT-5870	5427

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EXAMINER

CREPEAU, JONATHAN

ART UNIT PAPER NUMBER

1745

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31

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/042,681

Applicant(s)

ISHIDA ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 16-25 and 31-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-25 and 31-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office action addresses claims 16-25 and newly added claims 31-36. Claims 16-25 remain rejected for substantially the reasons of record, and claims 31-36 are newly rejected under 35 USC §102 and §103, as necessitated by amendment. Additionally, all the claims are newly rejected under 35 USC §112, first paragraph, as necessitated by amendment.

Accordingly, this action is made final.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 16-25 and 31-36 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Independent claims 1 and 16 have been amended to recite a ceramic particle content range of "1 to 10 parts by weight in 100 parts by weight of the active substance." The recitation of the lower endpoint of this range, 1 part by weight, does not have sufficient support in the application as originally filed. This endpoint is not set forth in any Example or otherwise specifically envisaged by the originally-filed application. Therefore, the recitation of this

endpoint in the claims is considered to constitute new matter. See *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); MPEP §2163.05(III).

Newly added claims 32 and 35 recite that the ceramic particles “increase discharge capacity of said battery by at least 20%.” The originally-filed application also does not appear to specifically envisage or contemplate this range. Accordingly, this limitation is also considered to introduce new matter into the application.

4. Claims 16-25, 32, 33, 35, and 36 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The ceramic particles being unrelated to charge and discharge reaction is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Independent claims 16 and 22, from which this limitation was removed, may be interpreted as reciting ceramic particles which participate in charge and discharge reactions. This is not enabled by the disclosure. See MPEP §2163(I)(B) and §2163.05(I).

#### ***Claim Rejections - 35 USC § 102***

5. Claims 16-18, 22-25, 31, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 8-321301. Regarding claims 16 and 22, the reference is directed to a lithium secondary battery (see abstract). Regarding claims 22 and 25, the positive electrode comprises a lithium transition metal oxide such as  $\text{LiCoO}_2$  which would be positive during discharging of the battery (see paragraph [0011] of the machine translation). Regarding claim 22, the battery contains a

microporous polymer film separator and a nonaqueous solution dissolving a lithium salt (see paragraph [0018]). Regarding claim 16, the electrolyte may also be a gel polymer electrolyte (see paragraph [0012]). Regarding claims 16 and 22, the negative electrode contains graphite, which would be negative during discharging of the battery (see paragraph [0016]). Regarding claims 16, 22, 31, and 34, the negative electrode further comprises ceramic particles not relating to charge or discharge of the battery. Regarding claims 17, 18, 23, and 24, the ceramic material comprises  $\text{Al}_2\text{O}_3$  (see paragraph [0016]). Regarding claims 16 and 22, the content of the alumina is 1 part by weight in 95 parts by weight of graphite (i.e., 1.05 parts in 100 parts), and the average particle size of the alumina is 3 microns (see paragraph [0016]). Thus, the range of 1-10 weight parts in 100 recited in claims 16 and 22 is anticipated. Further, the electrolyte does not comprise the alumina particles.

Thus, the instant claims are anticipated.

### ***Claim Rejections - 35 USC § 103***

6. Claims 32, 33, 35, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 8-321301.

The Japanese reference is applied to claims 16-18, 22-25, 31, and 34 for the reasons stated above. Further, regarding claims 32 and 35, Table 1 of the reference shows that batteries containing ceramic particles (batteries A8-A10) have a capacity retention ratio that is 20% higher than a battery not containing particles (battery B). Regarding claims 33 and 36, the Table also

shows that batteries having between 0.05 and 30 weight parts (in 95 weight parts of active material) each have 95% capacity retention.

However, the reference does not expressly teach that the *discharge capacity* of the battery is increased by at least 20%, as recited in claims 32 and 35, or that the ceramic particles are present in a ratio of between 5 and 10 parts by weight (in 100 parts of active material), as recited in claims 33 and 36.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to increase the discharge capacity of the battery of the Japanese reference by manipulating the amount of ceramic particles added to the negative electrode. It has been held that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). In this case, the artisan would be motivated to add particles so as to obtain as high a discharge capacity as possible (i.e., at least 20% higher than a battery not containing particles).

Further, Applicant's claimed particle content range of 5 and 10 parts in 100 parts of active material in claims 33 and 36 is considered to be rendered obvious by the disclosure of the Japanese reference. As noted above, the inclusion of up to 30 weight parts of ceramic particles yields acceptable capacity retention ratios (>95%). Therefore, although a value of between 5 and 10 weight parts is not expressly disclosed by the reference, the artisan would have a reasonable expectation of success of using a value within this range, and therefore would have sufficient motivation to use such a value. Therefore, the claimed range of 5-10 weight parts is not considered to distinguish over the reference. It is noted, however, that the reference teaches in

paragraph [0008] that more than 1 weight section (in 100 weight parts of the active material, binder, and conduction agent) does not result in an improvement in adhesion and that the unit mass and negative electrode capacity per unit volume will actually fall. Thus, this may be seen as teaching away from values larger than 1 weight part. However, where the teachings of two or more prior art references conflict, the examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might accurately discredit another. *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991); MPEP §2143.01. In this case, there is believed to be sufficient motivation to use a high particle content value ( $> 1$  weight part) because this results in a high capacity retention ratio. Further, such batteries containing large amounts of particles are identified by the inventors as being part of the invention (e.g., by their inclusion into battery group A1-A10). Accordingly, the reference is considered to fairly suggest using ceramic particles in an amount larger than 1 weight part.

7. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 8-321301 in view of Andrei et al (U.S. Patent 5,756,231).

The Japanese reference is applied to claims 16-18, 22-25, 31, and 34 for the reasons stated above. However, the reference does not expressly teach that one of the positive and negative electrode comprises the polymer electrolyte.

The patent of Andrei et al. is directed to composite cathodes (i.e., positive electrodes) comprising polymer electrolytes for lithium batteries (see abstract). The active cathode material comprises a lithium transition metal oxide (see col. 4, line 67).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Andrei et al. would provide sufficient motivation to use a composite cathode comprising a polymer electrolyte in the battery of the Japanese reference. In column 3, line 60 et seq., Andrei et al. teach that their battery has a “particularly high effective capacitance” and that the active cathode particles advantageously “do not tend to aggregate.” Accordingly, the artisan would be sufficiently motivated to use the composite cathode comprising a polymer electrolyte in the battery of the Japanese reference.

### *Response to Arguments*

8. Applicant's arguments filed October 22, 2002 have been fully considered but they are not persuasive. Applicants urge that the claimed range of 1 to 10 parts by weight in 100 parts of active material is not disclosed or suggested by the Japanese reference. However, as set forth above, the reference teaches a specific value (1.05 weight parts) within this range in paragraph [0016]. Thus, the range is anticipated. Applicants further urge that the claimed range yields “surprising results” in the form of a capacity increase. However, such a result is not sufficient to overcome a case of anticipation. See *In re Wiggins*, 488 F.2d 538, 543, 179 USPQ 421, 425 (CCPA 1973); MPEP §2131.04.

*Conclusion*

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-5408 or (703) 305-5433.

  
**Patrick Ryan**  
**Supervisory Patent Examiner**  
**Technology Center 1700**

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Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



**Patrick Ryan**  
**Supervisory Patent Examiner**  
**Technology Center 1700**

JSC

December 3, 2002